PRINTING EQUIPMENT ENGINEER

FEBRUARY • 1933

• A Technical Publication for Mechanical Executives Responsible for Printing Production, Equipment and Supplies

A REMARKABLE RECORD OF ACHIEVEMENT ★

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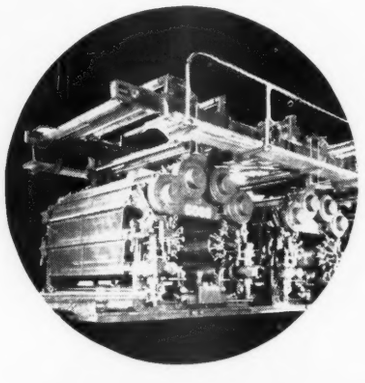

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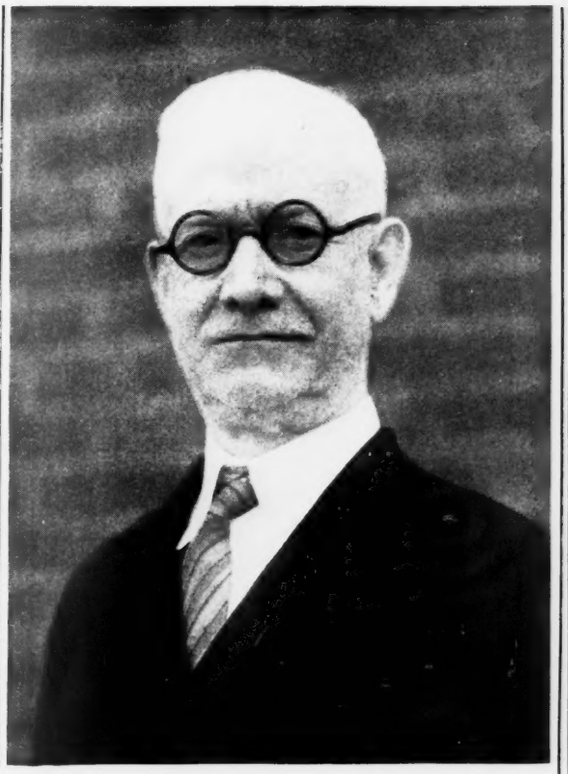

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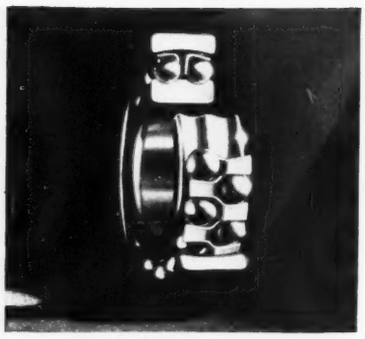

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PRINTING EQUIPMENT ENGINEER

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A Technical Magazine for Printing's Mechanical Executives

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Check in left column after reading. Note articles of interest.

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PRINTING EQUIPMENT ENGINEER
FEBRUARY, 1933

The Mechanical Executive and the Used Machinery Problem

[AN EDITORIAL]

A NEW "ethics of the profession" is needed for printing industry's mechanical executives in relation to the second-hand machinery problem. Briefly, the need is for a new attitude upon the part of the mechanical executive who should recognize that the second-hand machinery problem can be a menace to his industry, his employer and himself.

The mechanical executive owes it to his employer and should counsel with him as to the possible effect of an uncontrolled second-hand machinery market such as exists at the present time.

The market is glutted with second-hand printing machinery of various kinds. Some of it is thoroughly obsolete and some of it has taken its toll through depreciation from original owners who have replaced it with modern mechanisms. A smaller portion of it is worth reconditioning so as to function again as first-class machinery. Just now this condition is a menace to the welfare of the printing industry. How does this condition affect the mechanical executive and the firm by whom he is employed? And what can the mechanical executive do about it?

How serious the situation is may well be understood when it is pointed out that the country is filled with machinery which was turning over merrily in 1929, but since then has lain idle. While a great deal of statistical data has not been compiled, enough is known about the extent to which second-hand machinery is affecting business conditions so that leaders in the industry deem it of sufficient importance to deal with the problem through organization.

A factor which must be taken into consideration is the great number of consolidations of printing and newspaper plants during the past few years. In the line-casting machine field alone approximately a thousand units are for sale at any price which the seller may obtain for them. The saturation of press equipment, however, has not been brought about altogether by the depression and consequent consolidations, but has been spreading gradually in intensity over a period of time, due partly to the introduction of small, high-speed automatics which have displaced the more ponderous type of press. These discarded units are in a more or less depreciated or obsolete condition. Some of them, no doubt, which have not exhausted depreciation charges might be reconditioned and put on the market at fair prices. The rest will be taken care of by the law of progressive obsolescence.

A major movement to rectify some of the ills which beset the industry had its inception in Cincinnati last October when the Graphic Arts Conference authorized the formation of a Graphic Arts Conference Committee, which in turn will formulate plans for a Graphic Arts Council to be composed of printers, manufacturers and distributors of equipment and materials and those engaged in processes allied to printing such as photoengravers, electrotypers, lithographers, label manufacturers, book-binders and trade compositors.

In December the ENGINEER published an article by Joseph T. Mackey, executive vice president of the Mergenthaler Linotype Company, in which a plan was presented whereby this depreciated and obsolete printing machinery could be evaluated through a corporate body organized and composed of printers, and the setting up of an intelligent plan of procedure. Any accusation of self-interest on the part of the manufacturers is at once removed by Mr. Mackey's suggestion that the body be composed of and controlled by employing printers. The manufacturers would act as agents for the body in disposing of the reconditioned machinery,

the net proceeds from which would return to the corporate funds.

Without entering too much into the causes for the present condition of affairs regarding the second-hand machinery menace, the fact is that there is grave danger the industry will equip itself for years to come with depreciated and obsolete printing machinery. Inevitably this will bring about a stagnation of machine design unless controlled through some definite program on the part of printing's leadership. Machine design is essential to progress. Stagnation of design will stifle any attempt to improve the printing processes which now predominate and it will also permit easy inroads by competitive processes in the field. When that happens it is not a very brilliant picture to contemplate what the printer will get for or the value of his product. Then, too, there is also the matter of other competitive advertising mediums which are so eager to supplant printing.

In order to progress we must have new designs, new devices and new processes. These are best developed in the experimental laboratory of the manufacturer under highly organized conditions. The individual, it is true, develops something worthwhile occasionally, but in so many cases his vision is narrowed by his own peculiar environment which begets a condition that does not exist elsewhere. The manufacturer's vision is broad and he seeks to accomplish the greatest good for the greatest number. This statement is not made in disparagement of any ambitious inventor with an idea which might be developed into something of value. We do owe a debt of gratitude to the individual for many of our mechanical advancements. Invention, however, like other things has become a highly specialized profession.

The industry expects the manufacturer to improve his machines in order to enable the printer to turn out his work at a constantly lower cost of production. In order to comply with this demand, the manufacturer maintains investigational, research and laboratory facilities through which he develops new ideas and carries on experimental work. Is it unreasonable to expect the industry to absorb the costs of research and invention?

In the highest aspect, the printer is entitled to make a fair profit on the work done in his plant, and by the same token the manufacturer is entitled to receive the support of the printer through the purchase of the equipment he makes.

While the mechanical executive is not concerned directly with business conditions and the causes which bring them about, he *is* directly concerned with ways and means for helping his employer maintain business volume from a production standpoint. He is, therefore, concerned about equipment and methods used in producing profitably that which his employer has for sale.

Can you, as a mechanical executive, imagine a depreciated or obsolete machine contributing anything in the way of lower production costs to your employer's welfare or even to your own welfare?

The true function of the mechanical executive is best attained by working with his employer to lower production costs through scientific management and counseling with him to the end that modern equipment may be installed so that good work may be done at prices which will enable his employer to compete successfully and profitably for business.

Invention Leads Man to Higher Plane

[AN EDITORIAL]

PRINTING's mechanical executives deal with men and machines. Naturally their endeavors are not wholly mechanistic, inasmuch as they deal with and they are also concerned about the human element which is gradually, though sometimes abruptly displaced by new mechanical and electrical devices. The problem in industry is not to shut off invention but rather to have labor absorbed as the new mechanisms are put into use. Invention, we insist, can have only one ultimate end in view, *i. e.*, expediting production and the freeing of humanity from fatigue, monotony, drudgery, inaccuracy and waste in order to lead man into a higher plane of existence. Man, however, has not yet learned how to subordinate the machine in favor of the human element.

Milton E. Hanson, mechanical and chemical engineer, explains in this article for the benefit of our readers the principles governing the operation of the electric eye. This article will be printed in two parts, the first of which appears in this issue. In a following installment Mr. Hanson will describe practical applications of the "eye" for industrial purposes. So far as the printing industry is concerned, some applications of the electric eye are still in the experimental state, not having been perfected commercially. Our readers will remember Mr. LeGette's stories on the Semagraph which appeared in the April and May issues of the ENGINEER, as well as the story on Mr. Howey's photoengraving machine in the November, 1931, issue.

Books Received

PRINTING EQUIPMENT ENGINEER is always pleased to receive books from mechanical executive writers. The passing on of knowledge obtained through long periods of study and experimentation is a worthy endeavor.

"Make-Ready," by William W. Hitchner, superintendent of pressroom production, The Robt. O. Law Co., Chicago, Ill., is a fine technical book for mechanical executives and pressmen. We make this observation because Mr. Hitchner advocates that every pressman should use a micrometer, type-high gauge and a high-powered magnifying glass while making ready on the press, so that he will know *just what* he is attempting to do. The technical data is of a very practical nature and should be useful to any mechanical executive as well as pressmen in general.

The first chapter in the book is a reprint of an address delivered by the author before the Chicago Club of Printing House Craftsmen. Other chapters in the book are titled: "Hints for Printing Book Work," "Hints on Running Color Process Work," and "The Printing Inks We Use."

"Make-Ready," William W. Hitchner, 76 pages, bound in blue cloth, 5⅛ in. by 7⅛ in., The Robt. O. Law Co., Chicago, Ill.

The Electric Eye—Man's New Servant

May Be Employed to Perform Many Tasks—How It Functions Explained to Mechanical Executives

By MILTON E. HANSON*

"ELECTRIC EYE" is a very descriptive name applied to the photo-electric tube. Of course, really, it is not an eye. This calls to mind the misnomer of the cork leg. The artificial limb actually is made of wood, composition or metal but it was invented by a man named Dr. Cork. The tube will serve the purpose of an eye, and too, see many things beyond the vision of the human optic, either because the thing happens too quickly for the human eye to see or cannot register at all. It can detect any action and record the event for man to take cognizance of later. It can detect a change in a condition in the smallest fraction of a second and become the prime motive for starting or stopping machinery, and can be made to ring bells, light lights, close valves, in fact, it can be made to do almost anything.

ORIGIN OF WORD

"Photo" descends from the Greek word, "phos," meaning light. In order to grasp the principles of the photo-electric tube and learn how to apply it to practical use we should learn something of the physical properties of "light."

LIGHT DEFINED

Light is an imponderable force entirely without substance. It is born of force and spends or looses itself in force, therefore, it can never cease to exist.

This light force is transitory energy made apparent in vibrations traveling in waves set in motion mechanically, electrically, chemically or by any force agency. Wherever force is used these waves are always set in motion whether we can see them with our eyes or not, or whether we can detect them in any way.

These vibrations have both frequence and amplitude. See Figure 1. The greater the energy input the greater the amplitude and so the brighter or more powerful the light becomes. Different force agencies have to be employed to produce light of different frequencies, all of which have entirely different characteristics, notably the color, effect on chemical reactions, degree of visibility, sense of heat and many other apparent effects.

UNEXPLORED ENERGY IN LIGHT

These waves travel in a straight direction, emanating from their source at a constant velocity—186,000 miles per second. This, so far as we know, is also the speed of radiant heat waves, radio waves and also the speed of a lightning bolt or electric current flowing along a wire. This similarity shows the common nature of transmutable energy of this sort, yet each wave force, having its own peculiar characteristics, leads us to wonder how many more forms of energy there are all about us that man cannot yet comprehend through any known means at hand.

Nothing seems to affect light wave velocity as dissimilar waves can ride right over one another as do waves of the ocean and pass with the same speed through glass, air or vacuum.

Three agencies are at hand by means of which we can change the direction of light waves after having been set in motion. They are: (1) magnetic fields by which some certain waves are polarized, that is, attracted or repelled into other paths; (2) reflectors such as mirrors or any surface at all from which they may be turned; (3) refractories like prisms or lenses, through which most of the waves may pass in an altered direction. Every wave length is affected differently by each of these three agencies for diverting their path, such as the rainbow colors brought out through a prism, or a mirror will not reflect X-ray.

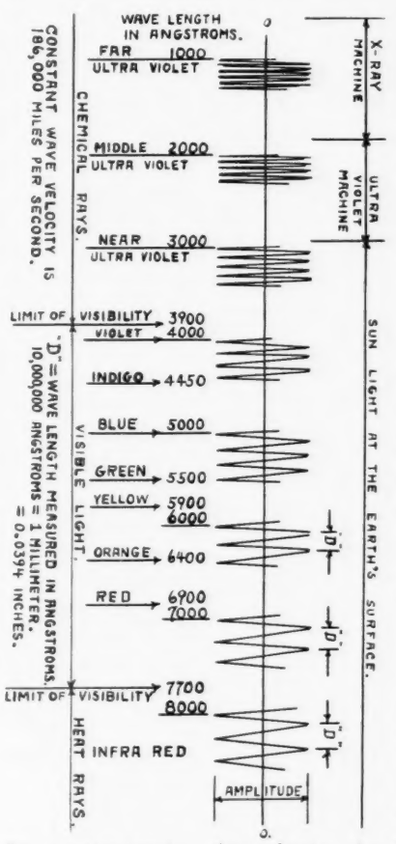

Fig. 1.—Comparative chart showing frequence and amplitude of light vibrations.

Nothing seems to affect frequency (wave length). After once having been set in motion, frequency remains constant until entirely absorbed, converted into some other form of energy or spent in doing work.

HOW WE DISTINGUISH OBJECTS IN DAYLIGHT

Amplitude is affected by everything. If we let light waves disperse without resistance or any interference at all over any distance we find the amplitude (intensity) decreases as the square of the distance increases from the source of light. Amplitude is affected by the material the waves pass through, according to the degree of translucency or density of the material. Amplitude is affected by every surface the waves fall upon. Some materials absorb more of the amplitude than others and waves of different frequencies are absorbed more than others, according to the surface with which they come in contact. That is how we are able to distinguish different objects in the daylight and why they become gradually indistinguishable as darkness come on. Radiant heat also follows this same law as to its amplitude, so radiant heat must be light energy.

DETERMINATION OF COLOR

Most materials absorb all but one of the waves of all frequencies. For example, a leaf absorbs all but the green ones, 5500 Angstroms in length. Thus we call it green. Different chemicals absorb all but certain frequencies, so by mixing them in clear glass we get the different colored lights when

*Mechanical and Chemical Engineer, Collingswood, New Jersey. Member A. S. M. E.

plain light containing all frequencies shines through it. Substances like carbon absorb them all, but reflect nothing, so we call it black. Substances like lime in our plaster absorb none and reflect all, so we call it white.

LIGHT AS AN ENERGY FORCE

We find that when light waves of any kind fall upon any substance they do something to show light is real energy force. The light waves either heat the substance when the waves are absorbed or change its chemical nature like drying paint or varnish (if we heat a varnished surface in the dark it dries then too, for heat is energy waves also), or change its physical reaction to other force agents as the electrical conductivity of certain metals such as strontium, tellurium, caesium, copper oxide, potassium, sodium, etc., some of which are now used in the manufacture of photo-electric tubes.

HUMAN SIGHT IS "FEELING"

Thus we learn the truth about our sight: that we do not see at all but *feel* these different frequencies of force by means of different nerves in our eyes, comprehending only those we can feel and only as accurately as the human mind can function. Is it any wonder we need the "electric eye" to aid us in exact work or to explore the field of light beyond the narrow band of human sight?

LIMITATIONS OF OUR KNOWLEDGE

The foregoing brief outline of the laws governing light seem to hold now at the present state of man's comprehension but there are so many unexplained reactions and evidences of frequencies and other uncharted phenomena that we are sure we have only scratched the surface and really know very little about light. To illustrate: What are cosmic rays of light which seem to be as strong at night as in the day time and born of forces in the stratosphere or out there in the universe between the stars? What sensibilities has man upon which they react? What are the rays from the Coolidge Tube, invisible "cold light," reacting upon a frequency above those of the X-ray, destructive to all flesh, greatly accelerating most chemical reactions and producing new ones unheard of heretofore?

Today "light" offers one of the greatest fields for research and startling discoveries. Through the study of it we will be led into the understanding of great forces about us and in the universe which now make no dent on our sensibilities but some day will be harnessed to our service, displacing many of man's inventions of today.

GENESIS OF MAN-MADE LIGHT

And so man, learning a little about "light," set about to make light. As the light of his intelligence grew he made better lights. Comparatively man has been on the job only a short time. Man found in passing current electricity through a wire or filament there was friction present and the wire became red hot. A carbon filament was the first element used that would last a fair length of time, heated red hot in vacuum, but it emanated a group of rays of low frequency predominatingly red with much sensible heat. A whiter cool light was sought. Many materials were tried and tungsten proved the best of hardy metals. It gives a light with many frequencies present, giving a whiter reaction upon the eye. Sunlight lamps have many metals alloyed in the filaments which coupled with certain inert gasses present in the bulbs give out a multitude of frequencies more as the sun does. We can not equal the sunlight, in all probability, unless we put in all the elements the sun contains.

Man now is able to make light with electricity but can not yet reverse the process. Think what this would mean! If one process is possible the reverse is always possible. Development of the photo-electric tube may lead right into a solution.

ELEMENTS AFFECTING KIND OF LIGHT

Man in his search for lighting appliances found that electricity when passed through mercury would vaporize it because of the heat of friction. The vapor was found to resist the flow of electricity somewhat, creating enough friction to keep it hot and in an incandescent state. Thus a light of lasting quality, known as the mercury vapor lamp was made. Ordinarily the mercury is enclosed in a glass tube but if quartz is used we have the ultra-violet lamp. Luminous mercury vapor gives out blue, violet and near ultra-violet waves (lead prevalent in common glass stops or absorbs ultra-violet and all higher frequencies). It was found possible to put certain chemicals in the quartz to absorb all visible light but let the ultra-violet through. Some peculiar effects can be obtained with such a mercury vapor lamp or "dark light." In a windowless room and with this dark light in operation a painting done with colors containing calcium, potassium or radium salts, etc., will be seen to stand out brilliantly in all its colors, whereas, a painting where non-luminous materials inert to high frequency chemical rays were employed would be entirely unseen. Other persons in the room can be located by the glow of their teeth, finger nails, eye balls, or a cut or wound where fresh blood is exposed.

OPERATION OF THE TUBE

It was found that when light of all frequencies or of a single frequency fell on the surface of certain metals like caesium, selenium and others, their resistance to the flow of an electric current was greatly changed, permitting a change of flow. High amplitudes (brightness) caused considerable change in current flow. Different frequencies (color) had much the same effect. So man has devised a tube filled with an inert gas to displace oxygen; put into it a curved absorbing surface coated with one of the metals and at the radius center of the curvature put a vertical metallic column. Each is connected through to the outside of the bulb to a source of constant current flow a few milliamperes in amount. The current runs in through the vertical column and jumps over as a stream of electrons to the curved caesium or selenium-coated plate. In the dark there is little current flow. In light from any source and proportionate to the amplitude (brightness) the capacity of the curved plate to receive electrons (units of force) is increased, so more electrons join the stream, thus permitting more current to jump across. This variation, small though it is, can be measured and recorded as to time and amount, minutely and with extreme accuracy. The current that jumps over can be amplified and thus any modification in its amount can be amplified, and too, by means of the ordinary type of tube much the same as employed in radio.

Next month Mr. Hanson will describe some practical applications of the photo-electric tube for industrial uses. These will be accompanied by illustrations of the subject matter.

WE APPECIATE THIS, MR. WYNNE

Melbourne, Australia, November 16, 1932.

Printing Equipment Engineer:

Gentlemen: Over the past three or four months I have been regularly receiving copies of your magazine, PRINTING EQUIPMENT ENGINEER, and would state how highly I appreciate the technical matter you publish. Having recently returned from a trip around the world, I am able to appreciate the well informed and up-to-date tone of your articles.

I am asking our Librarian to place you on our subscription list. Yours faithfully,

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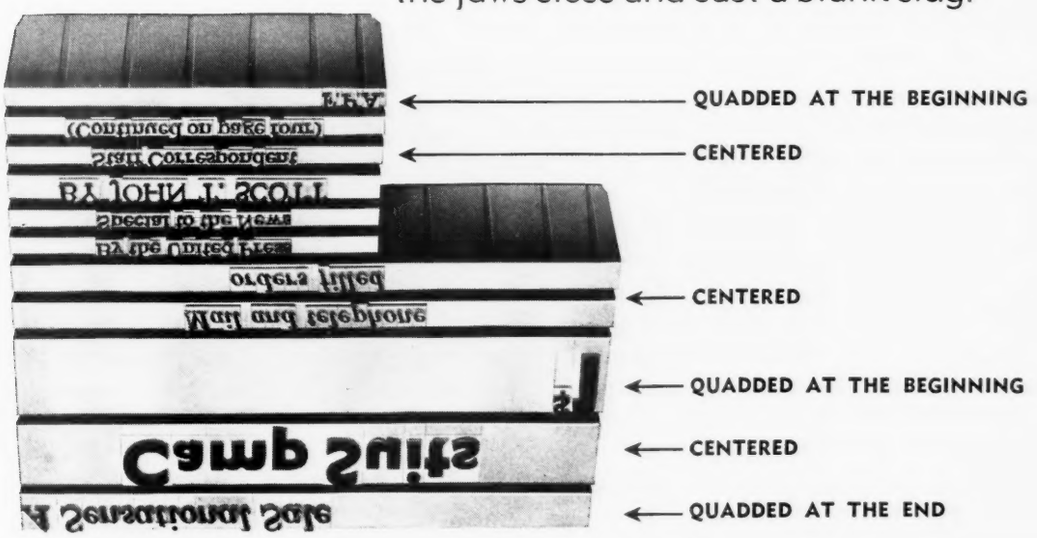

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Photo-Lithography and Offset Lithography

Mr. Toland Discusses Selection of Offset Press Equipment by Typographic Printer and Makes a Prediction

FRANK O. SULLIVAN, *Dept. Editor*

The writer of the following article, W. Craig Toland, has had twenty-seven years of practical experience in the photoengraving, printing and offset fields. His statements are free from bias and he does not believe that offset lithography is the panacea for all printing ills.

THE production of printing by the adoption of the offset press is today uppermost in the minds of many thoughtful printers.

Press sizes offered vary from 12x18 in. to 44x64 in. Plate equipment costs range from $1500.00 to $20,000.00. Various processes and methods are discussed with ease by the "initiated." Others are ready to explain the simplicity of operation of both press and plate making equipment. Claims are being made that the production of both advertising and job printing in the future will be by the offset method.

With costs of installation varying over 1000% and with opinions of production and operation so divergent a careful analysis of the small offset press sizes in typographic plants will be in order.

The offset press, due to improvements in plate making, within the last five years has become a high-speed printing press; a rotary press adapted to short runs.

The low cost of getting to the press, combined with the mass production of the press itself, plus the savings in the bindery on many orders, make it inevitable that equipment of this type will be used on large volumes of work formerly manufactured by letter press. On the other hand many orders can be manufactured at a lower cost and with a superior product on printing presses. The offset can only take from letter press those orders which it can produce at an equal or better quality and at a lower cost. The future of the industry is neither offset nor letter press but a combination of the two.

The selection of an offset press size must be made from an entirely different standard from that used in letter press printing. It is impossible to compare press sizes between the two methods due to the basic difference between their operating principles.

The size of a letter press is determined by the maximum single form required on the classes of work planned to be produced. It was this principle of letter press printing, combined with low operating cost and high speed of production which made the Verticals and Kellys so profitable in many plants.

In printing press operation, forms are only electrotyped or duplicate composition set, when orders are of sufficient quantity that the savings in press-work overcome the additional cost of electrotyping. The average length of run desired on the majority of printing orders make electrotyping or the setting of duplicate composition impractical. As a result we find that the average-size sheet run on the Verticals, Kellys and Millers is only a fraction over one-half of press capacity. Yet experience has shown that a reduction in press size would not lower the cost of production and the extra form size is available when wanted.

In determining the minimum practical operating size for an offset we lack the experience available in letter presses. With printing experience applied to offset and taking into consideration the changed operating conditions, it should not be a difficult problem for the typographic printer.

The high cost of electrotyping reduced the size of our modern high-speed letter presses. The low cost of duplication will inevitably increase the minimum practical operating size of the offset.

The composing machine is the offset printers' electrotype foundry, making the duplicate and placing it in position on the zinc plate, in perfect register, in about three minutes for each additional duplication. This makes the paper sizes to be run a determining factor in considering press sizes.

In the printing of bond papers the problem is solved. With the cost of duplication lower than the cutting of the stock down to smaller sizes, it is evident that the press must take standard bond sizes.

The large proportion of bond papers used are either 17 x22 in. or 19x24 in. with a much smaller quantity, 17x28 in. and other sizes.

Book papers come in larger sizes, making it impractical to print without cutting. Twenty-five by thirty-eight is the most popular book size. One cut and this becomes 19x25 in., or practically the size most advantageous in the printing of bond papers. Other popular book sizes are 26x40 in., 28x42 in., 32x44 in., and 35x45 in.

(Continued on page 20)

AN INVITATION TO OUR READERS

Readers of PRINTING EQUIPMENT ENGINEER are invited to submit inquiries relative to any phase of Offset-Lithography. We want to make this department of real value to those seeking expert technical advice. Address your inquiries to our Offset Editor, Frank O. Sullivan, care of PRINTING EQUIPMENT ENGINEER.

THANK YOU, MR. BRUCK

St. Louis, Mo., Sept. 27, 1932.

Printing Equipment Engineer,
Cleveland, Ohio.

Gentlemen: Want to be sure I continue to get the greatest little magazine that ever entered a print shop. Not a hundred pages of type, but a neat, concise messenger full of common-sense helps.

Continue the good work by sending the ENGINEER to 3115 Locust St., St. Louis, instead of 3433 Olive St. —please.

And thanks.

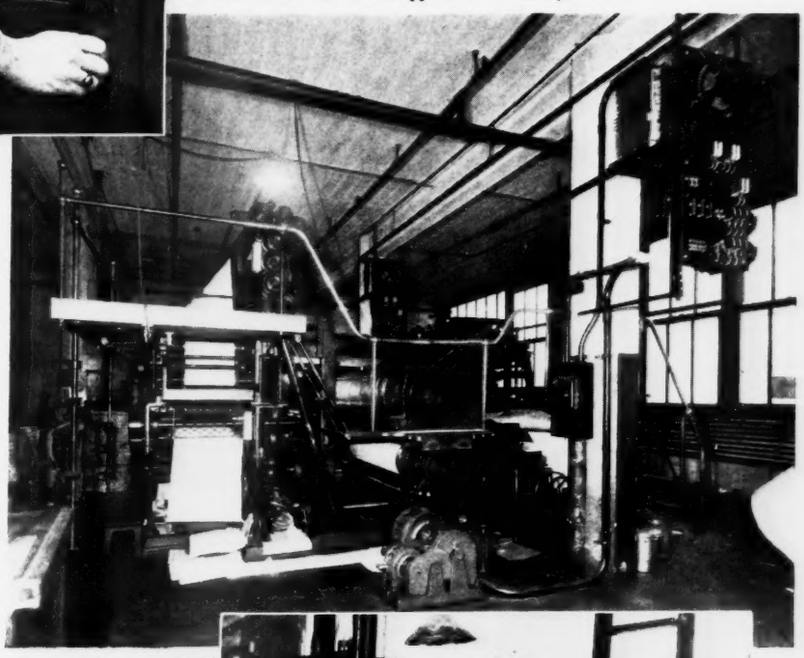
WALTER W. BRUCK, *Sec.-Treas.*,
Frederick Printing and Stationery Co.

FACTS COUNT!

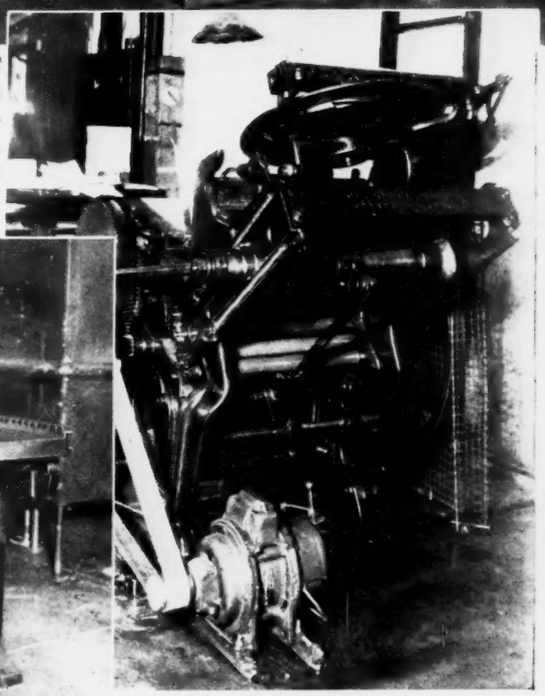
SWING back the door of the General Electric Printing Equipment Section and demand facts—facts that will guide you. as they did R. G. Dun & Co., the great credit agency, in selecting exactly the right equipment for installation in its Brooklyn plant, and the result will be the same: the *right* motor will drive your presses, and the *right* control will protect your machines and your operators.

Facts count: all the facilities of General Electric—sales, engineering, and service departments, and Motor Dealers—are ready to put the job through on time. General Electric has exactly the *right* motor and the *right* control for any service. The grand total: complete satisfaction for you.

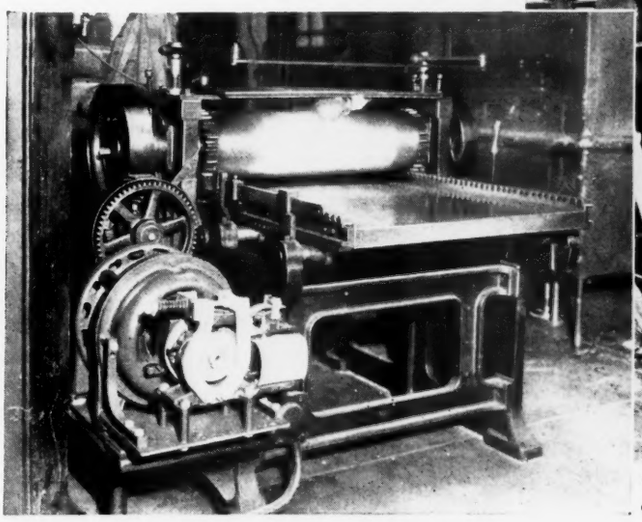
All the facilities of General Electric swing into action to give you the best when you open the door of the Printing Equipment Section. Proved engineering service; sound equipment values; motor and control apparatus from one manufacturer; service shops, warehouses, and sales offices from coast to coast—all are represented there, ready to serve. General Electric Company, Industrial Dept., Schenectady, N. Y



One of two G-E double-motor drives and controls operating R. G. Dun & Co. Cottrell reference book presses



Chandler & Price press—one of a battery of job and cylinder presses—all G-E motorized for R. G. Dun & Co.



Wesel matrix roller, R. G. Dun & Co., motorized by General Electric

201-227

GENERAL ELECTRIC

Power Magazine Shift for Linotypes

Detailed Technical Description of Mechanism Set in Motion After the Magazine Change Key is Depressed

By R. R. MEAD*

Mechanisms Involved are Quite Simple, Says Mr. Mead, and Their Operations are Less Complicated Than Detailed Explanation Might Seem to Suggest.

A LIGHT touch on a shift key as easy to reach as any keybutton on the keyboard makes possible the instantaneous shifting of magazines on the Model 25 Linotype, or the main magazines of the Model 26.

Since the introduction of the first mixer Linotype, in 1902 (the Model 2), on to the Model 4, in 1906; the Model 9, in 1910, and the Models 16 and 17, in 1916, interest has centered on the method of changing the operating positions of the respective magazines. The mechanical shift of the Models 2 and 4 was a simple mechanism which, by the slight movement of a lever, locked the escapement of one magazine and unlocked that of the other. The magazines were stationary. The shift on the Models 16 and 17 was on the same general principal as that of Models 2 and 4, but was actuated by the touch of a key instead of the movement of a lever. The magazines on those machines, also, were stationary.

In the designing of an instantaneous mechanical shift for the magazines of Models 25 and 26 the light touch of a key, which previous experience has proved to be the quickest and most dependable, was the principle adopted.

Only a light touch is needed, and the ensuing automatic shifting of magazines is accomplished speedily and positively, with a saving of time and energy on the part of the operator and a consequent speeding up of production.

The mechanisms involved are quite simple and sturdy, and their operations are considerably less complicated than a detailed explanation might seem to suggest. However, as many machinists and operators will wish to familiarize themselves with each step in the series of actions set up by the touching of the shift key, a detailed description, with illustrations, is presented here.

The mechanism consists of a finger key with a round, slightly crowned keybutton *A* attached to the right-hand side plate of the keyboard in line with the upper row of keys.

The finger key connects with a vertical link *B* which has a broad surface at the upper end. This broad surface, in turn, makes contact with a similar surface which forms the lower end of another link *C* slidably attached to the face plate frame and connected to the end of a short rocking lever *D*. The short rocking lever is pinned to a shaft *E* which runs in a sleeve *F* mounted in a bushing *G* in the intermediate bracket.

A bevel gear *H* keyed to the sleeve *F* at the rear end meshes with another bevel gear *K* keyed to the intermediate shaft, which imparts a continuous rotation to the sleeve *F* without any effect on the rocking lever shaft *E* or the rocking lever *D*.

The continuous rotation of the sleeve is necessary to drive the assembler belt pulley *L* located at the front end of the sleeve.

Pinned to the rear end of the rocking lever shaft *E* is a short extension lever *I* which carries a hardened steel pin *O* extending into and supporting a clutch yoke *J*.

The clutch yoke *J* contains a detent ball which is forcibly held in a detent in the hardened steel pin *O* by the spring S in the clutch yoke *J*. The clutch yoke *J* spans a slidable clutch *M* formed with double teeth at the right-hand end and mounted free on the intermediate shaft.

When the finger key *A* is pressed downward, a rocking motion is imparted to the short extension lever *D* so that it moves the clutch yoke *J* toward the right. A portion of the clutch yoke *J* is positioned between two annular flanges on the slidable clutch *M* so that, when the clutch yoke *J* moves toward the right, the slidable clutch *M* is also moved toward the right, so that the double teeth at that end engage with similar double teeth *P* which form a unit with the intermediate shaft bevel gear *K*.

At the limit of movement on the clutch *M* the detent ball in the clutch yoke *J* has been forced partially out of the detent in the hardened steel pin *O* and is held in that position by the side pressure on the clutch teeth. When the side pressure is released (which takes place

*Manager, Department of Research and Development, Mergenthaler Linotype Company, Brooklyn, N. Y.

when the limit of upward or downward movement of the magazines has been reached) the detent ball spring forces the ball fully back into the detent and causes the slidable clutch *M* to move toward the left and out of engagement.

The slidable clutch *M* is always in rotatable connection with a worm *W* mounted free on the intermediate shaft and when the clutch *M* is caused to rotate by being brought into engagement with the double teeth *P* of the intermediate shaft bevel gear *K* the worm *W* will transmit the rotary motion to a worm wheel *Q* mounted below the intermediate shaft.

From the worm wheel shaft *R* through a train of reducing gears *T* and a crank *V* a vertical reciprocating movement is imparted to a link *U* which is connected at its upper end to a bell-crank yoke-lever *Y*, so that the upward or downward movement of the vertical link *U* will produce a rocking motion to the bell-crank yoke-lever *Y*.

The bell-crank yoke-lever *Y* is mounted on the side frame of the machine and the yoke and engages a roll of a toggle shaft which swings the magazines.

An adjustable friction drive *X* on the worm wheel shaft *R* has been provided so that the worm wheel may turn without transmitting motion to the magazines should any obstruction interfere with its operation.

An indicator *OO* has been conveniently located above the left side of the keyboard so that it is unnecessary for the operator to watch the magazines when making changes.

Unnecessary Work

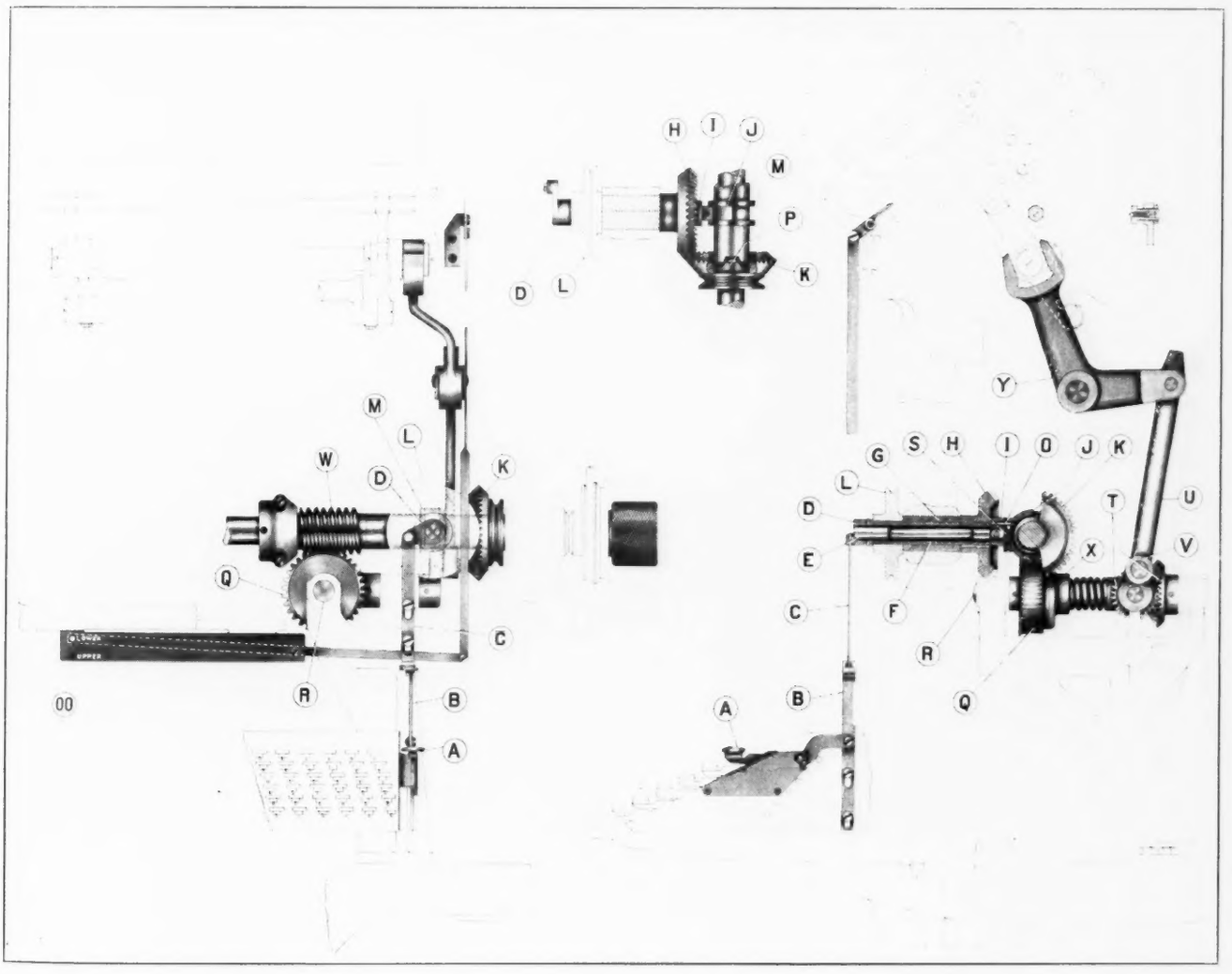
IT IS easy to do work which you have to do. But the work which you do not have to do pays the best. It requires strength of will to do this extra work.

"If I have made any progress," a man said, "I owe it to my willingness to take on extra jobs. I have never assumed any responsibility that I did not take seriously. I have always tried to give more than I bargained for; the result has been that I have received more than I expected."—*William Feather.*

Made Vice-President of Harris-Seybold-Potter Co.

J. W. Valiant, well and favorably known in Graphic Arts circles and for many years associated with the Harris-Seybold-Potter Company of Cleveland, has been elected vice-president of the company.

Mr. Valiant's headquarters will remain in New York where he will continue in charge of sales of Harris products for the Eastern District.



Pre-Trimming and Packing Stereo Mats

Disappearing Chase Pin Method May Be Used to Get Plates Through the Stereotyping Foundry In a Hurry

By STAFF WRITER

AMONG the great assortment of time and labor-saving methods which have been employed in the stereotype departments of a number of metropolitan newspapers there is a method of pre-trimming and packing the starter mat of an extra-news or baseball edition previous to moulding the page so as to cut down elapsed time after receipt of the form from the composing room until delivery of the finished stereotype plate to the pressroom. It is said that from one to three minutes may be saved in getting editions out to the street.

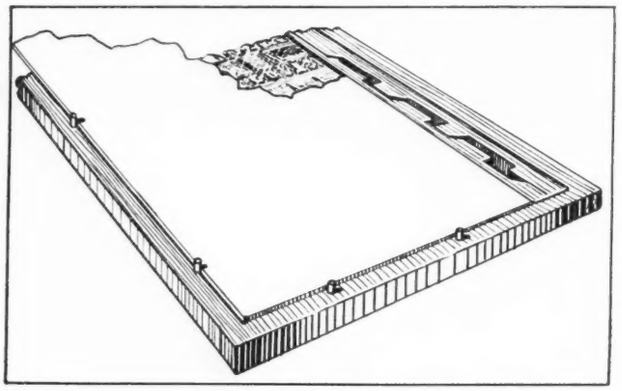


Fig. 1.—Dry mat trimmed to size and position on the page form against the disappearing gauge pins. The pins are caused to project upwardly by the pressure of small coil springs. While the form is passing under the moulding machine roller, the pins are depressed and rise again after passing the roller.

It is not claimed at this time that this method of pre-trimming and packing stereotype mats previous to moulding would make it desirable to mould all pages in this manner. The scheme, however, is presented as a suggestion worthy of considerable thought in line with the proposal of the Cincinnati A. N. P. A. Mechanical Conference that some action be taken by the Conference to ascertain whether a price concession could be obtained from the manufacturers dependent upon the production of a smaller size dry mat, since by this method a strip approximately 2¼ in. wide is trimmed off one side of the mat shown at *1*, Fig. 3, and ⅝ in. is also trimmed from the bottom of the mat. This is from a mat with original size of 20¼ in. by 24½ in., on a newspaper having a page lockup size of 8 columns, 12 ems with 6-point column rules 22 15/16 in. long. On an 8-column, 12½-em page using 6-point column rules, this 2¼ in. cutoff on one side would be reduced about 21/32 in. Not many papers employ this longer length of page.

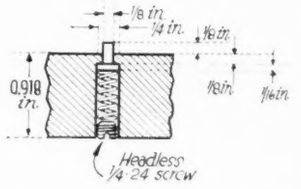


Fig. 2.—Detail drawing for application of the disappearing gauge pins to a page form chase.

The mat manufacturers have voiced their opinion that the materials saving on the price of a small-sized dry mat would amount only to about 7 per cent of the price of the mat because manipulation costs in mat-making far exceed the materials cost.

Nevertheless, it is claimed that the scheme for preparing mats previous to moulding entails no mechanical or operating difficulties whatever, after the stereotyper has become familiar with its procedure and in addition saves some time in stereotyping operations when time is valuable.

In the majority of newspaper plants the chases are scored with index lines, the impression of which is transferred to the mat while it is being moulded. These scored index lines indicate to the stereotyper just where the mat is to be trimmed for proper size before placing in the casting box. In order to save the time required to trim the mat after moulding (and in certain pages, the packing) the chases may be fitted with disappearing or gauge pins at convenient points along two sides of

(Continued on page 25)

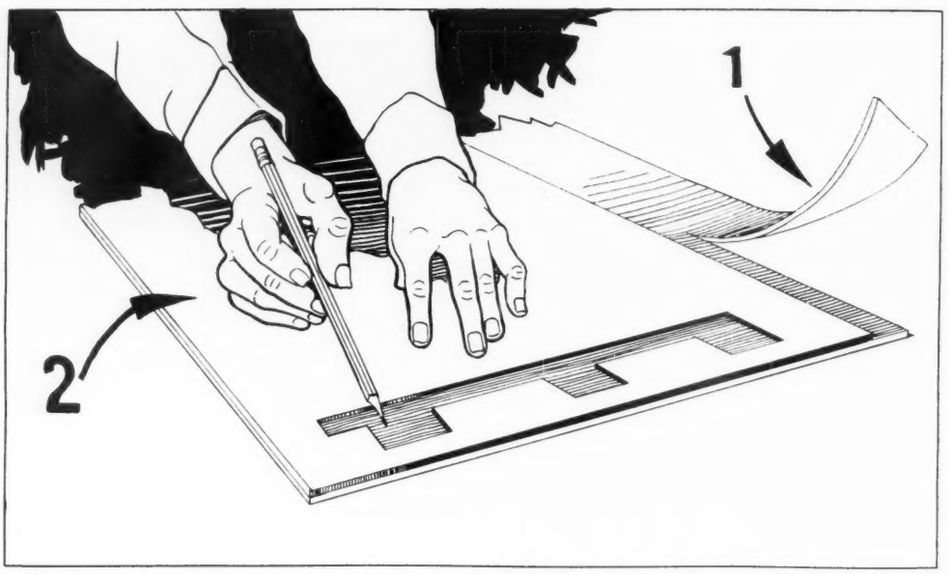
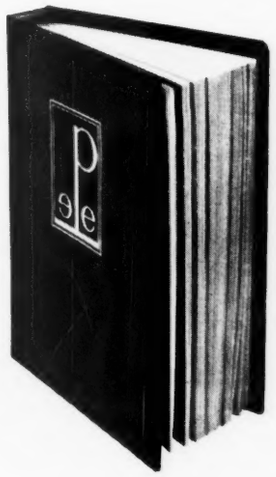


Fig. 3.—Method of marking mats by means of a cardboard mask to indicate where the packing pieces are to be attached previous to moulding. The open space in the mask 2, represents the position occupied by the heading on the first page of a newspaper.



File Each Valuable Copy

of PRINTING EQUIPMENT ENGINEER

In This Binder

WE now have available these strong, durable binders for your back copies of Printing Equipment Engineer. These binders are finished in dark blue Dupont Fabrikoid. They will hold twelve issues. Cover is embossed in gold and the name Printing Equipment Engineer together with 1931, 1932, or 1933 stamped on the back edge. These binders will keep your back copies clean, and always available for future reference.

Price, $2.00 each. Postage paid. Cash with order. Please state what year you desire on each binder. Orders accepted until April 1st.

PRINTING EQUIPMENT ENGINEER
1370 Ontario Street Cleveland, Ohio

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Enclosed find $_____ for ____ binders stamped with year as follows: 1931, 1932, 1933.

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Firm _____

Street Address _____

City _____ State _____

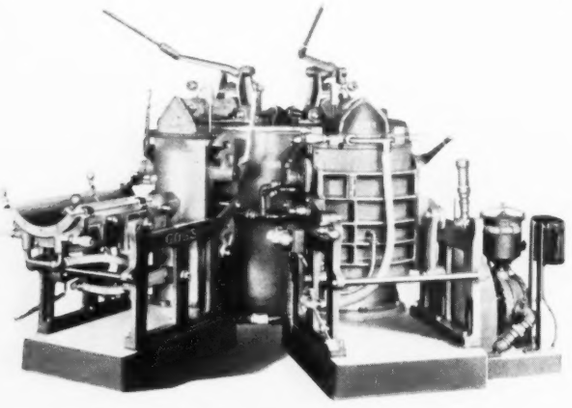
Latest Printing Equipment Mechanisms

After having read about the new equipment described, it will pay you to write to the manufacturer for further details about those new devices which it might be profitable to install in your plant.

Vacuum Electrically-Heated Casting Box

The new Vacuum Electrically-Heated Casting Box, manufactured by the Goss Printing Press Co., 1535 S. Paulina St., Chicago, Ill., is designed to bring out sharper detail on the printing surface to eliminate high and low spots. This is accomplished through the use of a vacuum suction applied through small perforations on the movable member of the casting box.

Such vacuum action not only holds the mat in close contact with the accurate curvature of the box while the plate is being cast, but it also pulls the stereotype metal into closer contact with the mat to produce more accurate detail. It also tends to draw off trapped air, or steam resulting from a



certain amount of moisture that may remain in the best scorched mat. When such air or steam forms on the type surface, it prevents the stereotype metal from filling in sharp detail. The Goss Vacuum Electrically-Heated Casting Box aims to eliminate these problems of the stereotyper.

Both the stationary and movable casting members are equipped with electric heating elements which are arranged as vertical strips in the casting members. The temperature of the casting members can be raised to a point where it will eliminate the defects and porosity arising from too rapid cooling or chilling. The casting box produces plates of a texture and density suitable for much magazine printing. The use of electric heating units also dispenses with the long and arduous task of casting heater plates.

Supplementing this equipment, the Goss Company announced in the January ENGINEER a Double-Knife Curved Shaver for those who wish to use the vacuum electrically-heated Casting Box for casting color or magazine plates. The vacuum casting box allows 0.018 in. for shaving in the double-knife shaver. The first knife takes a 0.012 in. cut and the second knife 0.006 in. cut. It is claimed that the Double-Knife Curved Shaver is not only faster but also more accurate than a boring machine.

Tests of plates cast with the Goss Vacuum Electrically-Heated Casting Box and shaved with the Double-Knife Curved Shaver have shown that in no case was there more than 0.001 in. variation in thickness throughout the plate.

The new casting box and shaver now being offered by Goss are reported to have produced stereotype plates with printing qualities comparable to electrotypes.

The New Seybold Automatic Spacing Cutter

Among the new machine products introduced this month to the Graphic Arts is the Seybold Automatic Cutter and Spacer. The Seybold Auto Spacer, it is claimed, is a dual-purpose machine designed to meet the exacting requirements of rapid and accurate cutting without measuring for each succeeding cut.

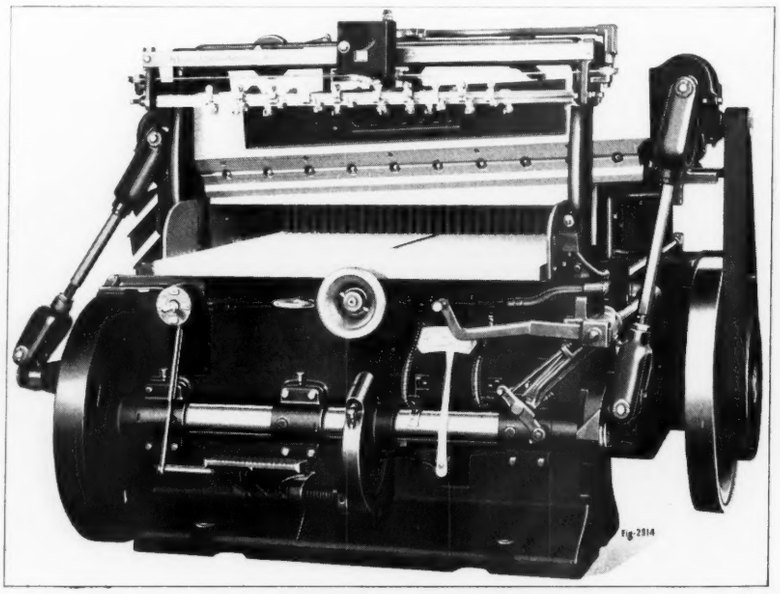
The more exacting the requirements for the cutting of uniform sizes, the greater its advantages. Production, it is claimed, is limited only by the ability of the operator to place the work in the machine and to remove the cut piles.

A conveniently placed electric button permits use of the machine for ordinary work as a regular cutter, or the resumption of the automatic spacing method. Indirect lighting permits easy reading of the indicator scale. The back gauge may be moved forward or backward by power, either automatically or manually.

The spacing bar which is conveniently placed across the front at the top of the machine is so arranged that a number of stops may be set to arrest the forward movement of the back gauge in distances from zero to the capacity of the machine. This spacing bar is designed to accommodate stops on each of four sides which permits maintaining at one time without interference of four different and distinct set-ups. Stops may be quickly and accurately set. First the back gauge is set in its rear position. The stock is placed in the machine and the back gauge brought forward manually until the stop is in position for the first cut. A position stop is then moved along the spacing bar until a red signal light indicates its proper position for cutting. The stop is then fastened by a set screw.

This procedure is repeated until the stops are located for each desired cut, including any trimouts. From this point the Seybold Auto-Spacer operates automatically, spacing each cut accordingly. A traveler moves along the spacing bar from stop to stop, its red signal light indicating automatically in each position the exact cutting point.

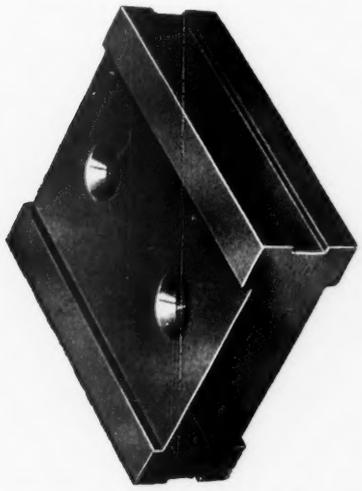
As each stopping point is reached, the travel of the gauge is automatically slowed to avoid possibility of the stock coast-



ing. Other features are that the particular sequence of cutting may be interrupted without disturbing the other set-ups, and that spacing is entirely unhampered to meet the requirements of the work at hand.

Precision Lock-up Furniture

Powers Precision Lockup Furniture which is manufactured by Powers Precision Lock-Up Furniture Co., Bayonne, New Jersey, is made of a hard fibre composition that is impervious to the action of ink solvents and atmospheric changes in the average print shop. It is claimed that it will not warp, shrink or expand and yet it is quite pliable. This feature, plus the additional feature of its shape, tends to eliminate the possibility of work-up, type off its feet, spring forms and loss of register.



The shoulders on its sides create a double grip on the side of the form, holding it securely and preventing it from coming off the bed of the press while running. The shoulders on the bottom act as feet, giving two contact points with the bed of the press. This tends to keep the form perfectly flat on the press bed without springiness. The holes act as outlets for any air that might be trapped beneath the form. Trapped air, it is claimed, is one of the causes of work-ups, the result of the air that has accumulated underneath the form. This trapped air escapes through that part of the form which offers the least resistance, that is, the spaces between words or around illustrations, forcing them up to the line of impression while the form is under impression.

This furniture is made in regular stock sizes, and can be had by the individual piece in any quantity or in fonts. It can also be furnished in odd lengths up to 60 picas and any width up to 10 picas, for use on work requiring odd sizes and which at present necessitates doubling up of the regular stock sizes.

This furniture is cut to pica precision and can be used in combination with any other article for makeup purposes.

Linotype Parts Teletypesetter Spaceband

The Linotype Parts Corporation, 270 Lafayette St., New York, New York, has just issued an 8-page folder, liberally illustrated with numerous halftones describing spacebands, liners, belts and other machine parts applicable to linotype and intertype machines. Among the items listed is a "special" teletypesetter spaceband which is designed to reduce the necessity of hand-spacing. It has a spread of 0.086 in., the minimum measurement being 0.040 in. and the maximum measurement 0.126 in.

Effect of Worn Pot Pump Plunger

When a line-casting machine pot crucible well and plunger are worn, the metal will bubble up on the surface of the metal in the crucible just above the well when the plunger is caused to make its downstroke in casting a slug. The loss of compression will cause a spongy or porous slug to be cast.

SATISFIED WITH CERTIFIED

CERTIFIED DRY MATS

CERTIFIED MERIT

(Continued from January issue)

What is Certified Service?

The services of experienced, practical field men who have at their finger tips the experiences of stereotypers in hundreds of plants throughout the country, are available to Certified customers without any charge for the time or expenses of our representatives.

Shipments are made promptly from ample stocks always on hand. We never recommend over-stocking, and thru our standing order arrangement calling for periodic shipments we help publishers keep down their investment in mats to a minimum.

Hundreds of publishers and their stereotypers are now benefiting from Certified Quality and Certified Service. We earnestly believe that you, too, can profit from Certified stereotyping in the same way and to the same extent.

Why not put Certifieds to the test in your plant now? There is no charge for samples and you do not obligate yourself in any way.

We sincerely believe that what we have to offer you will first merit your consideration and then your patronage.

CERTIFIED DRY MAT CORPORATION

338 MADISON AVENUE • • • NEW YORK, N. Y.

For dependable stereotyping — use Certified Dry Mats

Made in U. S. A.

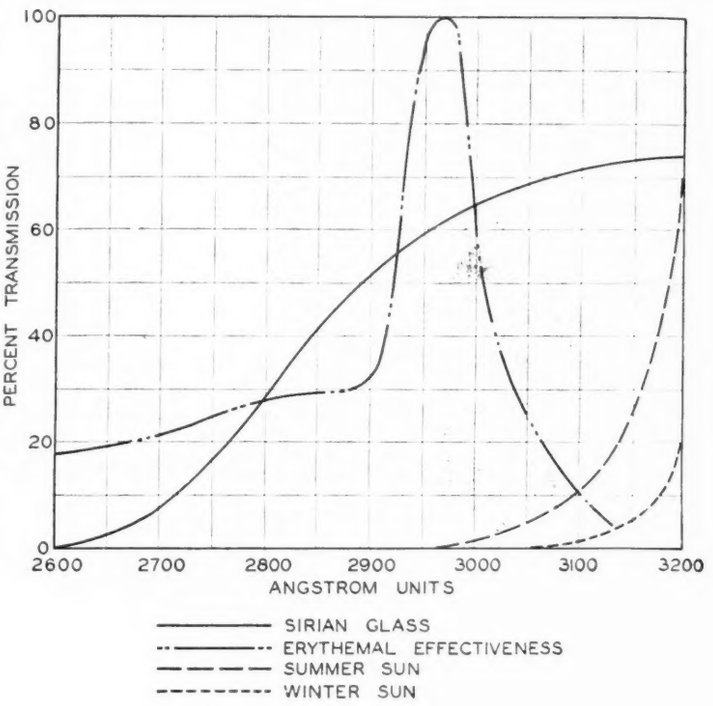
New Lamp Emits Ultra-Violet Rays

The Arcturus Radio Tube Co., Newark, New Jersey, is making a new lamp from Sirian Glass for use in printing plant general illumination. The lamp screws into conventional sockets or fixtures in the regular way and either A. C. or D. C. current may be used. It is claimed that this lamp provides ultra-violet energy plus pleasant illumination which closely resembles daylight so that pressman are enabled to match colors of inks with great accuracy. It is also claimed that keyboard operators and hand-men have found the light to be easy on the eyes, thus promoting operating efficiency.

Sirian Glass is a special glass developed in Germany, which is said to possess an unique and specific transparency to ultra-violet transmission. The quality of sharply cutting off at the lower end of the biological zone is particularly important in making it impossible to obtain from the Sirian Ultra-Violet Lamp undesired or dangerous rays. The glass is prepared to act automatically as a filter for blocking out any deleterious rays and at the same time passing, with a high degree of efficiency, the biological rays and, in addition, light rays emanating from an incandescent source. The spectral transmission of Sirian Glass is shown in the accompanying chart. This data represents observations made by the Electrical Testing Laboratories, New York, upon a commercial sample having a thickness of 0.61 millimeters.

The Sirian Ultra-Violet Lamp requires no auxiliary equipment, and its life is about the same as any standard lamp.

ULTRA VIOLET TRANSMISSION OF SIRIAN GLASS



Pyrometer for Type Metal Applications

A new Pyrometer which is particularly adaptable to type-casting, machine crucible temperatures as well as in Linotype and Intertype crucibles, Electrotype and Remelting furnaces is being marketed by Mishawaka Industrial Instrument Mfg. Laboratory, 936 Washington Ave., Mishawaka, Indiana.

It is claimed that these Pyrometers are of the highest quality materials and workmanship, having incorporated in them all the essentials which make a dependable and accurate temperature indicator.

The Pyrometer is equipped with Automatic Cold Junction Compensation. The instrument is encased in a substantial cast aluminum case, which is attractively and durably finished in black enamel.

The dimensions are: Height, 5 1/8 in.; width, 4 5/8 in.; depth, 2 1/4 in. Thermocouple or stem dimensions: Diam., 3/8 in.; length, 18 in. Net weight is 3 1/4 lbs.

Standard Ranges, Deg. F., 32-800; 32-1000. Deg. C., 0-400; 0-600.

The instrument illustrated can be had for wall mounting by using extension leads from the thermocouple to the instrument. A single instrument of the wall type can be used to take the temperature of any number of crucibles through a multiple switch.

Kork-O-Tan Blankets for Bottom Packing

The Behr-Manning Corporation, Troy, New York, is furnishing a Kork-O-Tan Press Blanket for bottom packing only on newspaper presses. A base cork fibre paper called Corkamoid, which is made from ground cork and long tough manila paper-making fibres, is treated to produce a flexible and highly resilient material and is then combined with a high-grade textile to give the necessary impression-resisting strength. These blankets are in use on the presses of several metropolitan dailies.

Photo-Lithography and Offset-Lithography

(Continued from page 12)

By increasing the press size from 19x25 in. to 20x26 in. we have a size which will take full sheets of a large proportion of our bond papers, half sheets of 25x38 in. and 26x40 in. and quarter sheets of other book sizes.

The thoughtful typographic printer will next consider whether a press of this size can be operated at a minimum cost.

On presses 20x26 in., built to meet theoretical conditions in old-line lithographic plants, to secure production, it is necessary to use a pressman and feeder.

Modern offset presses of this size occupy less than 50% of the floor space of the older type of machines. Their open type of construction gives access to every operating part, permitting maximum production by a competent pressman.

In the bindery production cost on many orders can be reduced if the sheet size run on the offset permits. The typographic printer is already thoroughly familiar with the possibility. In printing he has been able to make the savings possible by gang folding, stitching and gathering, only on orders sufficiently large to justify running four to eight up. These savings become possible on every order run on the offset.

When we consider handling in the hand and machine bindery and the sizes of the average folding machines in use, the 20x26 in. sheet size press will again stand the test of economical operation.

The offset press to be successful in typographic plants must become simply a short run, high-speed, rotary printing press. Its minimum practical operating size must stand the same test applied to letter press, considering the change in operating conditions.

Before installing offset every letter press printer should weigh the question of press size carefully. A little thought to the difference of operating methods may save him many hours of financial worry in the next few years.

January Printing Patents

Printed copies of patents are furnished by the Patent Office at 10 cents each. These may be obtained by addressing the Commissioner of Patents, Washington, D. C.

1,891,252. PRINTING MACHINE. William H. Waldron, New Brunswick, N. J., assignor to John Waldron Corporation, New Brunswick, N. J., a Corporation of New Jersey. Filed Feb. 19, 1931. Serial No. 516,850. 10 Claims. (Cl. 101 — 199.)

1. The combination in a flat block printing press, of a printing head, means comprising a cam functioning to positively lower the printing head to perform the printing operation and disabling means associated with the printing head for rendering it inoperative.

1,891,286. SHEET DELIVERING AND PILING APPARATUS FOR PRINTING, RULING, CUTTING MACHINES, AND THE LIKE. Heinrich Miersch, Leipzig, Germany, assignor to Messrs. G. E. Reinhardt, Leipzig, Germany. Filed Sept. 28, 1929 Serial No. 395,857, and in Germany Oct 31, 1928. 5 Claims. (Cl. 271 — 86.)

1. In an apparatus for collecting sheets of paper issuing from printing, ruling and like machines the combination with conveying means adapted to carry forward the sheets in transit at a relatively high speed exceeding 160 feet per minute of rigidifying means adapted to gradually curl up the lateral edges of the sheets in transit for their full length, stretching means cooperatively associated with the rigidifying means so as to keep flat and under tension the middle section of the sheets intermediate their curled edges, and piling means controlling the final position of the sheets as they drop upon each other and being adapted to produce a strictly straight-edged pile.

1,891,614. PRINTING PRESS. Otto R. Wolf, River Forest, Ill., assignor to The Tribune Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 3, 1931. Serial No. 506,344. 7 Claims. (Cl. 101 — 152.)

1. In a printing press for printing in intaglio, a printing unit comprising a pair of printing couples, each couple including an impression cylinder and an intaglio cylinder for printing a portion of the width of the web, one of the cylinders of the second couple being under-cut circumferentially over that portion of its length corresponding to the width of the section of the web printed by the first couple to allow the web section to pass through the unit without contacting the cylinders of the second couple.

1,891,965. QUICK CHANGE WEB SPLICING DEVICE. Henry A. Wise Wood, New York, N. Y., assignor to Wood Newspaper Machinery Corporation, New York, N. Y., a Corporation of Virginia. Filed Apr. 10, 1930. Serial No. 443,083. Renewed July 29, 1932. 22 Claims. (Cl. 242 — 58.)

1. In a web splicing mechanism, the combination with means for movably supporting a running roll and a fresh roll, of a set of tension straps mounted with one end above the level of the fresh roll and extending down past the running roll, means for holding the straps with a yielding pressure against the running roll independently of the size of that roll, and means acting between the tension straps for forcing the web against the fresh roll to cause it to be attached thereto.

1,892,136. PLATEN FOR PRINTING MACHINES. Paul J. Clark, Longport, N. J. Filed Nov. 20, 1930. Serial No. 496,843. 5 Claims. (Cl. 101 — 236.)

1. A platen having rubber along one portion of its length and cork along another portion of its length, a print roll for intermittent operation by the platen, and mechanism effecting driving engagement between the print roll and platen, the print roll having printing and non-printing portions engaging the platen respectively along the cork and rubber surfaces thereof.

1,892,154. PRINTING PRESS. James Edgar Lee, Grand Haven, Mich., assignor to Challenge Machinery Company, Grand Haven, Mich., a Corporation of Michigan. Filed Aug. 5, 1930. Serial No. 473,152. 9 Claims. (Cl. 101 — 269.)

1. A printing press including a table having a flat upper surface, bearer bars located one at each side of the table formed with rack teeth at their lower sides, a platen roller carriage mounted to traverse the table and having wheels bearing upon the upper sides of the bearer bars, the upper sides of the bearer bars being located in a plane not higher than the upper surface of the table, means for turning the roller and gearing connected with the roller and operable simultaneously therewith meshing with the rack teeth on the bearer bars

1,892,156. TYPE CASTING MACHINE AND MATRIX THEREFOR. Chester A. Macomic, Chicago, Ill. Filed Jan. 8, 1931. Serial No. 507,393. 11 Claims. (Cl. 199 — 65.)

1. A matrix, for use with a typecasting machine, having means for yieldingly moving a plurality of matrices, and for stopping each of the matrices at a predetermined point, the matrix comprising a long relatively narrow bar having type impressions along one face thereof, a spring abutment at one end of the bar and a stop at the other end of the bar.

1,892,214. DOCTOR MECHANISM FOR ROLLS AND CYLINDERS. Frederick W. Lodding, Worcester, Mass. Filed June 22, 1929. Serial No. 372,889. 13 Claims. (Cl. 92 — 74.)

1. In a device, a thin flexible blade providing a straight scraping edge, and means for frictionally clamping the blade from opposite sides parallel to its edge and adjacent thereto to permit lateral adjustment of the blade by the application of a force outside of the area of frictional engagement by the clamping means.

1,892,623. MEANS FOR SECURING A BLANKET TO A PRINTING PRESS CYLINDER. Thomas L. McElroy, Flatbush, N. Y. Filed Dec. 2, 1930. Serial No. 499,602. 5 Claims. (Cl. 101 — 415.1.)

1. In combination with a cylinder having a transverse opening in its periphery, a transverse plate normally disposed in the opening and having a roughened face for normally engaging and pressing a blanket against the cylinder at the opening, the plate being provided with teeth extending from its inner edge for engaging the blanket, and means to secure the plate to the cylinder.

1,892,682. METHOD OF MAKING A PRINTING PLATE. Thomas Ernest Richards, Auckland, New Zealand. Original application filed Oct. 20, 1927, Serial No. 227,623, and in New Zealand Nov. 22, 1926. Divided and this application filed June 4, 1929, Serial No. 368,424. Renewed May 21, 1932. 4 claims. (Cl. 95 — 5.4.)

1. The method of preparing lithographic printing plates, which comprises applying a film of bichromate emulsion to a grained metallic plate, photographically exposing and developing the film so that the portions which remain provide a matrix of a desired image form applying an ink-absorbing coating containing a metal-penetrating agent, heating the plate so that the agent penetrates the metal and produces a bond, and thereafter removing the matrix form.

1,892,875. PLANOGRAPHIC PRINTING PROCESS. Valentin Dietz, Frankfort-on-the-Main, Germany, assignor, by mesne assignments, to Multigraph Company, Wilmington, Del., a Corporation of Delaware. Filed Aug. 1, 1930. Serial No. 472,490. 4 Claims. (Cl. 101 — 149.)

1. The process of printing comprising treating a plate with a solution of ammonium nitrate, ammonium phosphate and glycerine and using on such treated plate an ink containing ammonium nitrate, ammonium phosphate and glycerine.

1,892,974. WEB SPLICING DEVICE. Henry A. Wise Wood, New York, N. Y., assignor to Wood Newspaper Machinery Corporation, New York, N. Y., a Corporation of Virginia. Filed June 20, 1925, Serial No. 38,473. Renewed June 2, 1932. 15 Claims. (Cl. 242 — 58.)

1. In a web replenishing device, the combination with a reel having means for supporting a plurality of web rolls thereon, and means for rotating the reel, of a web roll propelling device comprising a web engaging roll, means for rotating the web engaging roll at web speed, a pulley rotating with the roll, a shaft parallel with the roll, a belt for rotating the shaft from the web-engaging roll, a pulley on the shaft on which the belt runs, the belt operated by the pulleys constituting a propelling means driven at the speed of the web for engaging the fresh web roll and rotating it

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1,893,053. PERFORATING DEVICE FOR PRINTING PRESSES. Karl Funcke, Ottweiler, Germany. Filed Feb. 4, 1932, Serial No. 590,941, and in Germany Jan. 2, 1931. 3 Claims. (Cl. 164 — 98.)

1. In a printing press, a perforating device comprising a plurality of bipartite perforating knife holders, a cushioned recessed slide having a perforating knife edge and a cushioned cam bolt disposed within each of the bipartite knife holders, the cams of the bolt being adapted to engage the recesses in the slide, a pressure appliance connected with the knife holders and bolt and consisting of a casing, a rotatable shaft herein, a toothed disc having notches differing in depth, means for connecting the toothed disc with the shaft and engaging the notches, a control member actuated by the press and means connecting the control member with the toothed disc to render the knives operative and inoperative.

1,893,148. ARTICULATED FOUNTAIN DIVIDER. Robert R. Page, Crestwood, N. Y. Filed Feb. 16, 1931. Serial No. 515,971. 9 Claims (Cl. 101 — 210.)

1. A fountain divider having a three-part articulated construction comprising a fulcrum member, and a pivoted fountain clamp and ink divider head hereon.

1,893,163. PLANOGRAPHIC PRINTING PROCESS. Valentin Dietz, Frankfort-on-the-Main, Germany, assignor, by mesne assignments, to Multigraph Company, Wilmington, Del., a Corporation of Delaware. Filed Dec. 9, 1929. Serial No. 412,916. 11 Claims. (Cl. 101 — 149.)

1. The process of printing, comprising forming on a plate an image which will retain a fatty ink, and treating the plate with a solution of materials which will form an ink-repellent coating over the non-image surface of the plate and with an additional substance to prevent oxidization of the plate, and repeatedly printing from such plate by using an ink treated in such manner that it will adhere to the image without adhering to the coating on the non-image portion of the plate.

1,893,164. SAFETY-DEVICE FOR PRINTING MACHINES AND THE LIKE. Bruno Fassmann, Berlin, Germany, assignor to Addressograph Company, Chicago, Ill., a Corporation of Delaware. Filed Dec. 17, 1929, Serial No. 414,790, and in Germany Mar. 20, 1928. 6 Claims. (Cl. 192 — 130.)

6. In a printing machine, an operating member, a printing member, a connecting bar having a plurality of teeth therein, means detachably connecting the connecting bar to the printing member, means for disconnecting the connecting bar from the printing member, a spring for urging the disconnecting means into disconnecting position, a detent for holding the disconnecting means against the action of the spring, a bar connected to the detent, and means operable by an obstacle in the path of the printing member for moving the bar into engagement with the teeth on the connecting member whereby the means may be moved therewith to disengage the detent from the disconnecting means.

1,893,247. QUICK-DROP ATTACHMENT FOR TYPE-CASTING MACHINES. Thomas W. Robison, Hillsdale, Oreg. Filed Mar. 24, 1931. Serial No. 524,839. 5 Claims. (Cl. 22 — 70.)

2. A quick-drop mechanism for typecasting machined comprising the combination of a pump cam having a yieldable dip with means for latching the dip into a retracted position, and means for releasing the latch by the rotation of the cam.

1,893,455. SHEET-FEEDING MECHANISM. Albert Alexander Stone, London, England. Filed Nov. 4, 1930, Serial No. 493,440, and in Great Britain Nov. 23, 1929. 3 Claims. (Cl. 271 — 44.)

1. In apparatus for feeding sheet material from a stack, the combination with sheet-feeding means, of means for engaging the lowermost sheet of the stack and delivering the same to the sheet feeding means, a support for the sheet engaging means adapted to be elevated to shift the latter to sheet-engaging position, mechanism for reciprocating the support toward and from the sheet-feeding means, the support being collapsible from sheet engaging position in response to tension applied to the sheet by the sheet feeding means, a pivoted lever associated with the support, and a cam for engaging the lever to elevate the support.

Monotype Increases Sans Serif Range

The Monotype Company has added two new series to its Sans Serif Family—Monotype San Serif Medium Condensed, No. 354, and Monotype Sans Serif Extrabold Condensed, No. 333. A condensed version of the San Serif Light is also in preparation. These new faces are original designs by Sol. Hess, Monotype Typographic Manager and Assistant Art Director. Matrices are available for casting type for hand composition

ABCDEFGHIJKLMNO
abcdefghijklmnopqrst
Monotype Sans Serif Medium Cond., No. 354

abcdefghijklmnopq
Monotype Sans Serif Medium, No. 331

ABCDEFGHIJKLM
abcdefghijklmnopq
Monotype Sans Serif Extrabold Cond., No. 333

abcdefghijklmn
Monotype Sans Serif Extrabold, No. 332

in all sizes from 14 to 36 point on the Monotype Type-Caster, 14 to 18 point on the Monotype -Thompson Type Caster, and in all sizes from 14 to 72 point, inclusive, on the Monotype Giant Caster. Variant characters are provided in all sizes of both faces. Also in preparation is the 84-point size of Monotype Sans Serif Bold, title line capitals, to be cast on a 72-point body. Specimen sheets showing all sizes of the Medium and Extrabold Condensed faces will be sent to all who may write to Lanston Monotype Machine Company at its main office in Philadelphia.

Letters to the Editor

FURTHER INFORMATION ON CUT-MOUNTING SYSTEM

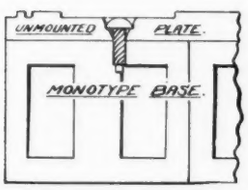
Philadelphia, Pa., January 19, 1933.

A number of letters which I have received since my article on "Spacing Material Used for Mounting Plates" appeared in the January issue of PRINTING EQUIPMENT ENGINEER, would indicate that I did not clearly differentiate between conditions calling for the use of barbed electrotypers' nails in mounting cuts on Monotype materials used as base and those conditions calling for the use of drive-screws. With your kind permission I will clarify this situation so that no misunderstanding can exist.

It must be understood first that when pages containing plates are to be electrotyped or stereotyped, or proofs taken only, that a few barbed electrotypers' tacks or glue will suffice to fasten plates to the base. However, when pages or forms are put on a press for direct printing, a much more secure and reliable method of fastening plates to the base must be employed.

Plates mounted on solid materials (solid machine-set or hand-set quads, slugs and 14 and 18-point solid Giant Caster furniture) can be securely fastened to the base for printing on flat-bed presses by using barbed electrotypers' nails ½ to ⅝ in. long.

When cored quads or hollow Giant Caster furniture (24 to 72 point) are used as base, drive screws must be employed to anchor the plates. The plates are first properly positioned and fastened to the furniture or slug base by tacks or glue. When the plates have been properly positioned and the page or form is locked up ready to print, they are more securely fastened with drive-screws. For mounting 0.065 in. thick halftones and zincs and 0.154 in. thick electrotypes, or nickeltypes, a No. 0x¼ in., type "U," hard metallic drive-screw is used. (See original article in January ENGINEER for description.)



Cross-section showing the plate, the monotype furniture base and drive-screw.

In mounting plates on metal base by either of these methods no attempt should be made to fasten the plates finally and permanently for printing until the form has been securely locked in the chase ready to be put on the press for printing.

The accompanying illustration shows a cross-section of an electrotype plate mounted on hollow Giant Caster furniture. If electrotypers' nails were used with this furniture or with hollow ("cored") Monotype quads the barbed points of the nails would project into the hollow core and might fail to hold during printing. The drive screws hold the plate securely to the base.

Plates mounted on Monotype materials used as base as hereinabove described will stand many thousands of impressions (in some cases 250,000 or 300,000 have been run) without signs of loosening.

Always remember to use barbed electrotypers' nails of ½ to ⅝ in. length for solid cut-mounting materials; use drive-screws for hollow ("cored") cut-mounting material.

Very truly yours,

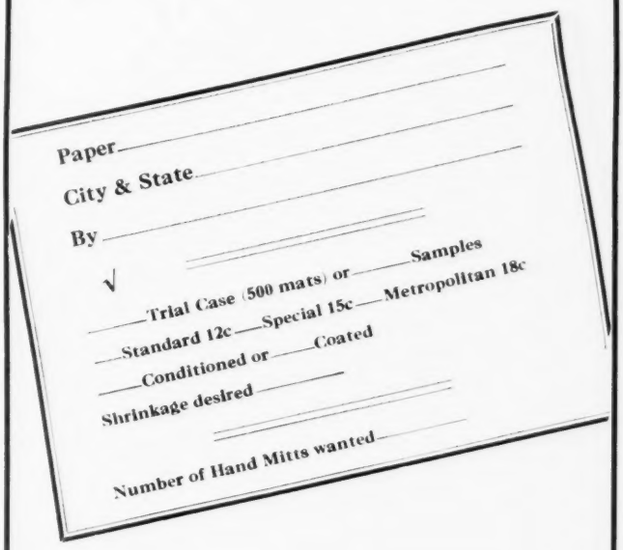
FRANK M. SHERMAN.

Wood Mats Make Good With the *N. Y. Daily News*

IN January, 1929, came the Trial Order—"500 Wood Dry Mats." In April, 1929, Wood Mats became "regular" with the *Daily News*, and that famous tabloid has been using them ever since.

There is recommendation for you in this experience of the *Daily News*. Use the coupon for your "Sample Lot,"

—And at the same time let us send some hand mitts for your men. How many?



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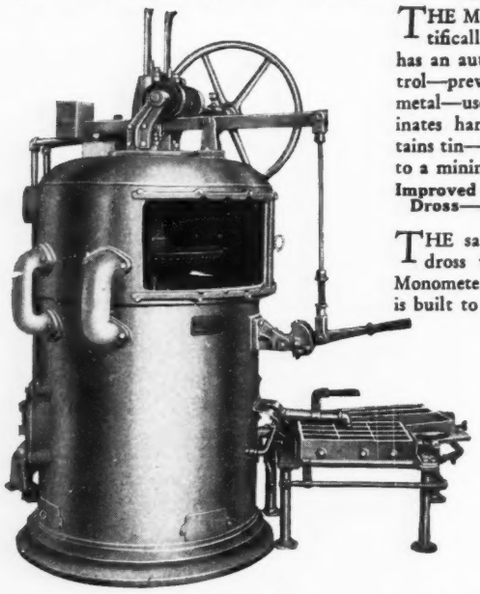

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Intertype Announces New Egyptian Face

A new Egyptian block flat-serif face is being cut by Intertype for use on line-composing machines. This face, though containing many refinements and improvements, will have the general appearance of similar flat-serif faces which have recently proved so popular in hand type, but have not heretofore been available for use on line-composing machines.

Intertype Cairo

Intertype Cairo

14 Point Cairo with Bold

This new Intertype offering will be known as Cairo and is being cut in sizes 8, 10, 12, 14 and 18 point, both light and bold, and on Intertype wide-tooth matrices.

Intertype states that orders for Cairo are now being booked for delivery within the next two or three weeks.

The increasing use of small capitals instead of Italic for emphasis in modern advertising composition has brought about a demand for bold small capitals in all the standard faces.

The light versions of standard Intertype faces have always had small capitals in the Roman and in some Italics. It is now the policy of this Corporation to add small capitals to the standard Intertype bold faces in Roman and Italic.

GARAMOND BOLD SMALL CAPS

GARAMOND BOLD SMALL CAPS

14 Vogue Oblique with

***Vogue Bold Oblique** 23*

Intertype Garamond Bold and Garamond Bold Italic small capitals are shown above. These can be added to the fonts of matrices of such faces now in use.

Another important addition to the Intertype Vogue series is the Light Oblique and Bold Oblique duplexed on the same matrix. The size shown below is 14 point.

Vogue Oblique with Vogue Bold Oblique is now made in sizes 8 to 14 point and specimens will be furnished upon application to Intertype Corporation, 360 Furman Street, Brooklyn.

Goss Company Announces Promotions

George A. Eddy was elected Chairman of the Board of The Goss Printing Press Company, manufacturers of newspaper and magazine presses, at the annual meeting of the Company, January 24. Martin W. Brueshaber succeeds him as President of the Company. The promotions will affect neither the company's management or policies, it was pointed out.

The new Chairman of the Board has been with The Goss Printing Press Company for the past forty-two years, and has been President for the past fifteen years. Mr. Brueshaber, who formerly held the position of vice-president, has been with the Goss company for the past thirty-eight years, having worked his way to the top from the position of apprentice machinist in the company's shops.

Other officers of the company are J. A. Riggs, vice-president; H. S. Mount, vice-president in charge of the New York office; R. C. Corlett, secretary; and L. E. Walsh, treasurer.

Pre-Trimming and Packing Stereo Mats

(Continued from page 16)

the index lines as is indicated in Fig. *1*. A working drawing for applying the pins to the chase is shown in Fig. *2*.

It is a comparatively easy matter to place the mat in proper position on the form so that the trimming of the mat after moulding will be eliminated provided the mat has been cut to a true square beforehand. If all mats could be furnished with at least two square sides, approximately 12 per cent material could be saved by making the mats smaller and much of the waste which is now trimmed off in stereotype foundries could be eliminated. Even if the size of the mat were reduced enough so that the stereotyper would be required to trim only the bottom and one side of the mat, it is claimed that a material saving in time could be made through the use of the disappearing gauge pin system.

In order to pack a mat previous to moulding, it is necessary to know the typographical construction of the page in advance. On the extra-news editions, in plants where the disappearing gauge pin method is in use, the first page heading is usually constant. To provide a means of knowing where to pack the mat a mask may be made from cardboard or bristol board, through the openings of which the packing outlines may be marked with a pencil on the mat as shown in Fig. *3*.

The mask is made by first cutting the four sides into true right angles. Place the mask on the page against the gauge pins after inking the form in the same position the mat will occupy and take a proof directly on the mask. The open spaces which show on the proof in the head (which ordinarily would be packed) are cut out with a sharp knife.

The mask is now ready to lay on the back of a mat which has been trimmed to size previously. With a pencil mark the outline of the opening in the mask. The mat may now be packed and is ready to be moulded.

New Flint Unit

Another new manufacturing unit was opened February 1 by the Howard Flint Ink Co., at 3900 West Pershing Road, Chicago, Ill. This unit is located in an especially designed building and occupies 15,000 square feet of floor space. It is intended that the Flint Company will be better able to serve customers in Chicago and vicinity as well as throughout Wisconsin, Illinois, Iowa, Minnesota and the Dakotas. Joseph A. Lunning and William P. Kennedy have been added to the sales staff. These men are well known in the Chicago printing territory.

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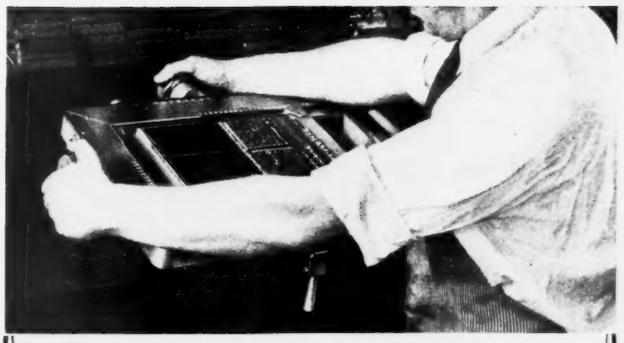

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In justifying and sizing a make-up page on the galley, the finger pressure used is wholly insufficient and never twice alike, resulting in wide variations of make-up.

The Hacker Make-Up Gauge applies regular lock-up pressure in sufficient amount to squeeze the form together properly. And it is always the same pressure on all Gauges and for all comps.

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Catalogs, Books and Bulletins

Readers of PRINTING EQUIPMENT ENGINEER who are interested in securing any of the catalogs, books or bulletins listed below can do so by checking the literature desired. Mark carefully only that literature which you wish to receive. Fill out the coupon and send it to us. The literature will be forwarded without cost except where noted.

The ABC of Rotogravure Printing—An explanation of the elementals of the rotogravure process for the reproduction of photo and line effects in advertising and publications.

One Dot or a Million—Bulletin illustrating and describing technical details in the manufacture of zinc for photo-engravers' use.

More Profits for the Print Shop—Folder illustrating and describing line of saw-trimmers for composing room use.

Meet Ad. Hesive—Folder telling about qualities needed in a makeready paste for the pressman. The paste described is claimed to have all these qualities.

The Evaluation of Bronze Stamping Leaf—Technical Bulletin No. 17 issued by the U. S. Government Printing Office. The Bulletin is based on cooperative research conducted by the Employing Bookbinders of America and the Division of Tests and Technical Control of the Government Printing Office.

Bulletin on Precision Proof Presses—Illustrating and describing hand and power-operated precision proof presses which are used in the process of correcting dimensional errors in type, rule, halftones, electros, blocks and bases.

Precision Lock-up Furniture—Booklet illustrating and describing fibre furniture for use in locking forms in chases so as to cause the matter within the chase to "stay on its feet."

Monotype Method of Mounting Cuts—Booklet illustrating and describing simple method of mounting cuts on Monotype Furniture, Quads, Leads and Slugs.

Printing Equipment Engineer,
1370 Ontario St., Cleveland, Ohio.

Gentlemen: Please send the literature checked above without obligation.

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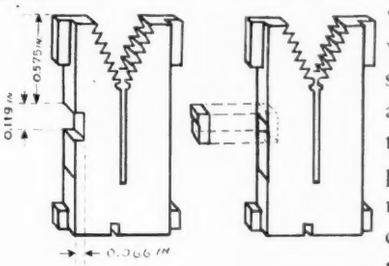
Emergency Inset Matrices

SOMETIMES the machinist in a composition machine plant is called upon to help overcome an odd problem needing immediate solution.

J. Troy Cobb, chief machinist in the plant of the Haddon Composition Co., Inc., New York, states that recently the firm had a job of composition to do which required lines to be numbered along the margin of the page—5, 10, 15, etc. In order to facilitate the work, it



was decided to use vertical figures, the slugs to be placed alongside the matter to be printed. The particular kind of matrix face wanted could not be obtained at once. Some matrices were then made up to provide the face and position wanted.

This was accomplished by milling a slot 0.066 in. deep and 0.119 in. wide in 10-point single-letter quads. Small rectangular sections of stock were cut from superior figure matrices containing the matrix cell. These were sweated into the slot in the quad matrix.

Each small section cut from the superior figure matrices, which were cut slightly longer than the width of the slot, were fitted into the slots tightly enough to hold while being sweated in and were finished easily after having been soldered. The matrix used was marked 10 triangle 1.

The inset matrices were used to cast hundreds of lines and appear not to have been affected by the heat transmitted by the metal.

The Use of Parting Powder

Parting Powder, usually of talc formation, is used by some stereotypers so as to cause the mat to release quickly from the casting and at the same time fills up some fractures in the mat which were made when moulding the form.

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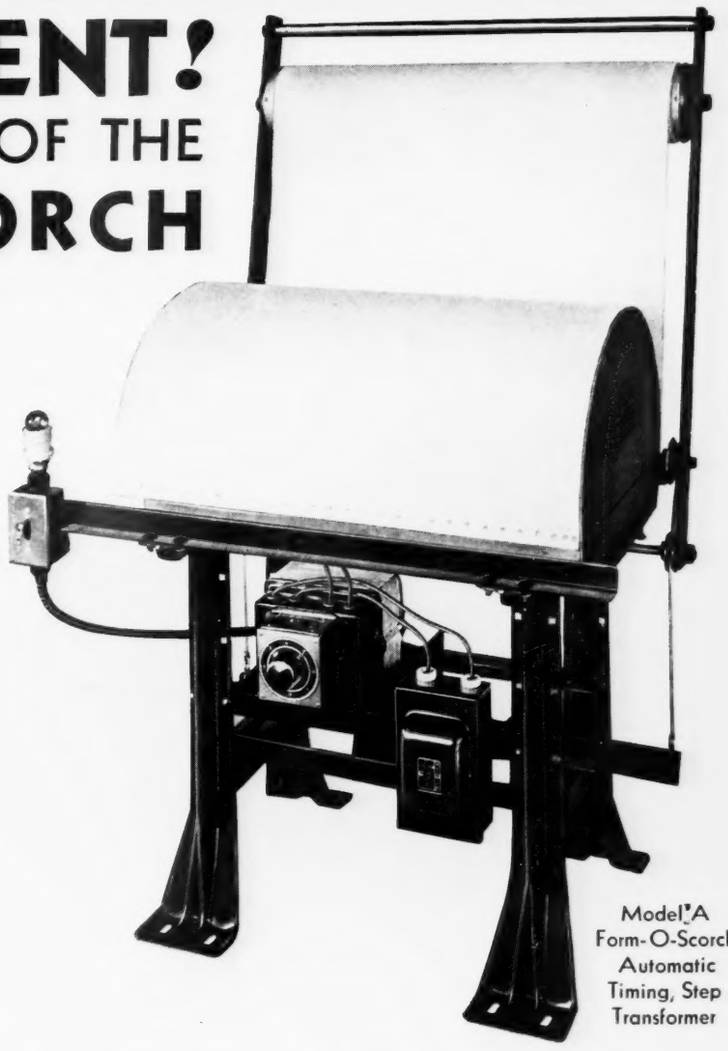
ACHIEVEMENT!
MARKS THE VALUE OF THE
FORM-O-SCORCH

Nearly half-a-hundred satisfied users of this new machine have acclaimed its outstanding superiority, and each month adds more prominent publishers to the list.

For efficiency in the production of perfect mats, speed of operation, and moderate initial cost, the Form-O-Scorch has no equal.

It Forms and Scorches in one operation, eliminates buckling, warping, remolds and recasts, saves time and labor, costs little to operate and speeds production.

If you want perfect mats at least possible cost, now is the time to look into the question of Mat production in your plant and send for more complete details on the Form-O-Scorch.



Model "A" Form-O-Scorch Automatic Timing, Step Transformer

Ask Any of the Following Users What They Think of the Form-O-Scorch

Boston Herald-Traveler (2) . Boston, Mass.	Circular & Publication Printers, St. Charles, Ill.	Waukegon News-Sun . . Waukegon, Ill
Waltham News-Tribune . Waltham, Mass.	Atlantic Register Co. . Watertown, Mass.	Morning Telegraph . New York, N. Y.
Evening Recorder . . Amsterdam, N. Y.	State Times . . . . Baton Rouge, La.	Lima News . . . . . Lima, Ohio
Saratogian . . Saratoga Springs, N. Y.	National Mat Service . St. Louis, Mo.	Republican Journal . Ogdensburg, N. Y.
Progress Bulletin . . . Pomona, Calif.	Polish Daily News . So. Boston, Mass.	Hartford Courant . . . Hartford, Conn.
White Plains Reporter, White Plains, N. Y.	York Dispatch . . . . . York, Pa.	Knickerbocker Press . . Albany, N. Y.
Times Publishing Co. . . . Warren, Pa.	Times-Dispatch . . . . Richmond, Va.	Florida Times-Union . Jacksonville, Fla.
Republican Times . . . . Ottawa, Ill.	Montreal Star . Montreal, P. Q., Canada	Eagle-Tribune . . . Lawrence, Mass.
Daily Journal . . Stevens Point, Wisc.	Daily Local News . . West Chester, Pa.	Brockton Enterprise . Brockton, Mass.
Record-Herald . . . . Wausau, Wisc.	Sharon Herald . . . . . Sharon, Pa.	Courier Company . . Connellsville, Pa.
Daily Review . Rockville Center, N. Y.	Christian Science Monitor . Boston, Mass.	Dayton Daily News . . Dayton, Ohio
Beatrice Sun . . . . . Beatrice, Nebr.	Herald-Sun Papers . . Durham, N. C.	Monitor-Index . . . . Moberly, Mo.
Appleton Post . . . Appleton, Wisc.	Pilot Publishing Co. . . Boston, Mass.	Citizen-Advertiser (2) . . Auburn, N. Y.

Prices on both models with detailed specifications on request

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Certfied Dry Mat Corporation, New York City.
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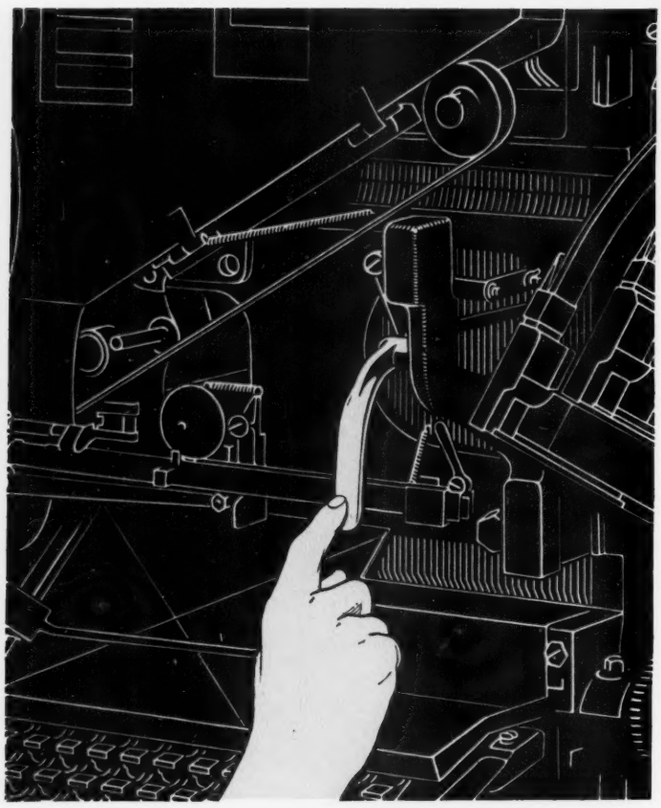
INTERTYPE MODEL F MIXER

FAST AND FLEXIBLE

GIVES YOU THE PRICE "EDGE" WHEN FIGURING ON MIXED COMPOSITION–



With Finger-Touch Ease—TWO SIZES of type—four to six faces—Mixed Composition at straight-matter speed—on the INTERTYPE MODEL F MIXER

and much of today's composition is mixed composition in many sizes

Books—periodicals—advertising literature—nearly all kinds of book and job printing call for at least TWO SIZES of text type. That is why the Model F Intertype Mixer SAVES MONEY. The operator on a Model F sets TWO SIZES of type—from four to six faces—at maximum straight-matter speed, with INSTANT CHANGES from one font to another.

Count the number of motions required to change from one size of type to another on any non-mixer line composing machine. Then note that the same result is obtained INSTANTLY—at the touch of a finger—on the Intertype Model F Mixer.

There is no waiting for the distributor on the Model F. Distribution is simple, dependable, and entirely automatic. This feature alone saves a lot of money. The operator can work on TWO SIZES of type, as called for by the copy, and can make corrections in TWO SIZES in order as they occur. This saves copy cutting and the handling of galleys, proofs, and corrected lines. It makes for greater speed and fewer errors.

Mixed composition at straight-matter speed is an Intertype achievement of great importance. It is saving a tremendous amount of money for printers. It makes for lower estimates and at the same time larger profits.

For 16-cylinder performance at 4-cylinder cost of operation, use the Model F Intertype Mixer. It can be furnished for widths up to 30 picas (5 inches) or 42 picas (7 inches)—with or without mixer side units carrying two or four side magazines. For complete information address nearest branch office.

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The Intertype Automatic Quadding and Centering Device eliminates the cost of setting white space by hand—on both text and display composition.

One or more characters of any point size can be instantly and automatically quadded or centered with or without spacebands. Full justified lines will cast whether or not the machine is set to quad or to center.

This device does not in any way complicate the operation of the machine on which it is used.

Set in Vogue Extra Bold and Oblique and Ideal News